



US005432790A

United States Patent [19][11] **Patent Number:** **5,432,790****Hluchyj et al.**[45] **Date of Patent:** **Jul. 11, 1995**

[54] **METHOD FOR ALLOCATING INTERNODAL LINK BANDWIDTH IN A PACKET ORIENTED COMMUNICATION NETWORK TO GUARANTEE DELAY QUALITY-OF-SERVICE**

5,289,462 2/1994 Ahmadi et al. 370/94.1

OTHER PUBLICATIONS

G. R. Ash, B. M. Blake & S. D. Schwartz, "Integrated Network Routing and Design," Teletraffic Science for Cost Effective Systems, Networks and Services, Elsevier Science Publishers, 1989.

G. R. Ash, "Traffic Network Routing, Control and Design for the ISDN Era," Traffic Engineering for ISDN Design and Planning, Elsevier Science Publishers 1988.

Primary Examiner—Douglas W. Olms

Assistant Examiner—Shick Hom

Attorney, Agent, or Firm—Darleen J. Stockley

[75] **Inventors:** Michael G. Hluchyj, Wellesley; Amit Bhargava, Watertown; Pierre A. Humblet, Cambridge, all of Mass.

[73] **Assignee:** Motorola, Inc., Schaumburg, Ill.

[21] **Appl. No.:** 123,457

[22] **Filed:** Sep. 17, 1993

[51] **Int. Cl.⁶** H04J 3/16

[52] **U.S. Cl.** 370/95.1; 370/94.1

[58] **Field of Search** 370/95.1, 94.1, 94.2, 370/60, 60.1, 95.3, 58.1, 58.2

[56] **References Cited****U.S. PATENT DOCUMENTS**

4,334,306	6/1982	Ulug	370/94.3
4,914,650	4/1990	Sriram	370/94.1
5,231,633	7/1993	Hluchyj et al.	370/94.1
5,280,483	1/1994	Kamoi et al.	370/94.1

[57] **ABSTRACT**

A device and method allocate bandwidth on internodal links in a communication network such that worst case maximum delays and worst case average delays in a packet oriented network are guaranteed while providing statistical gains in maintaining predetermined end-to-end delay QOS objectives for different traffic types.

9 Claims, 5 Drawing Sheets